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THE LAST ATTACK ON DARWINISM*

THIS volume, which in bulk, general appearance, and typography bears a close resemblance to the earlier editions of the "Origin of Species," seems got up to stand by its side on the bookshelf, an ever ready antidote to the pernicious doctrines of Mr. Darwin and his supporters. After a careful perusal we must confess that it may seriously damage Mr. Darwin's reputation with those who have never read his works; but we are quite sure that no one who has studied the "Origin of Species," and been convinced of the general accuracy of its statements and conclusions, will have their convictions at all shaken by Dr. Bree's argument. As, however, it is just the work to be read by those who have only a second-hand knowledge of Mr. Darwin's works, we feel it to be a duty to call attention to the very careless manner in which the book is written,—its numerous errors, misrepresentations, and misconceptions, and its extensive use of declamation and opinion as sufficient answers to Mr. Darwin's elaborate observations, carefully selected facts, and cautious inductions.

In a work of purely adverse criticism, the first duty of an author is to quote his opponent's words with scrupulous accuracy. Yet, in the very first page of his book, Dr. Bree misquotes Dr. Hooker; at p. 3 and again at p. 9 he repeats this misquotation; and he devotes eight pages to proving that what Dr. Hooker did not say is erroneous. The quotation is from the Presidential Address at Norwich. The words actually used, and to be found in the authoritative report, are:—"So far from Natural Selection being a thing of the past, it is an accepted doctrine with almost every philosophical naturalist; including, it will always be understood, a considerable proportion who are not prepared to assent that it accounts for all that Mr. Darwin assigns to it." Dr. Bree omits the word *almost*, and then sets himself to convict Dr. Hooker of misrepresentation, by showing that with some "philosophical naturalists" it is not an accepted doctrine.

On p. 2 Dr. Bree makes a misstatement, almost equally glaring, of another author's view. He says, "And Mr. St. George Mivart has proved, and I think incontestably, that it (Natural Selection) *has not a basis of truth*;" and refers the reader to "Genesis of Species," 1871. But in this volume we find (at p. 5) the author's statement, that the object of his book is "to maintain the position that 'Natural Selection' *acts, and, indeed, must act*, but that still, in order that we may be able to account for the production of known kinds of animals and plants, it requires to be supplemented by the action of some other natural law or laws yet to be discovered."

A little further on Dr. Bree discusses Herbert Spencer's "First Principles;" and how far he is likely to elucidate that philosopher's views may be seen by the following curious blunder. At p. 48 he tries to explain to his readers what Spencer means by "the integration of matter,"

and quotes the following passage from his "First Principles":—

"Every mass, from a grain of sand to a planet, radiates heat to other masses, and absorbs heat radiated by other masses; and in so far as it does the one it becomes integrated, while in so far as it does the other it becomes disintegrated."

Dr. Bree appears to have been afraid that his readers would hardly be of sufficient mental calibre to comprehend this passage. He therefore elucidates it as follows: "Integration of matter, therefore, is the absorption of heat, and heat, we are told by Tyndall, endorsed by Spencer, is 'tremulous motion'—therefore, integration of matter is the absorption of motion." We think Dr. Bree has hardly done justice to his readers by merely turning Spencer's statement topsy-turvy, and showing them that a "good rule will work both ways;" he should further have illustrated the subject by what that philosopher terms a concrete example, and explained that, in his view, water is *integrated*, when, by absorbing heat, it changes into steam, and *disintegrated* when by radiating heat it becomes solid ice!

If the supposed fallacies of such men as Hooker and Spencer, who, in Dr. Bree's opinion, are mere satellites of Darwin, are thus ruthlessly exposed, we can hardly expect the chief conspirator himself to receive much mercy. In his "Animals and Plants under Domestication," vol. ii. pp. 250-255, Mr. Darwin carefully discusses the various views as to the causes of variability, and arrives at the conclusion that variability is *not* an ultimate fact necessarily contingent on reproduction (p. 253), and that variability of every kind is directly or indirectly caused by changed conditions of life (p. 255). Dr. Bree, however, referring to the same chapter of the same work, gives his view of the writer's meaning in the following passage:—"But Mr. Darwin goes further. He says there is an inherent tendency in the constitution of the organism to vary, independent of, but modified by, its conditions." At p. 191 Dr. Bree states, as if on Mr. Darwin's authority, "that tortoise-shell cats are so coloured as a rule only in the males;" and at p. 192, that Mr. Darwin "does not believe" exactly what Mr. Darwin says he does believe. But these are only errors of the pen in the haste of argumentative composition; a less excusable mistake is made at p. 212, where, after quoting a passage from Mr. Darwin about mimicry, Dr. Bree says:—"This passage implies that an insect can imitate the organisation of another insect, by means of a knowledge that such organisation is safer from enemies than that in which nature had clothed it. A more unsound, unphilosophical, unproved, reckless statement is not to be found, &c. &c. . . . It is only just to say that the above theory did not originate with Mr. Darwin. It is the *sole production* of the fertile brain of Mr. Wallace." Here we have a misrepresentation and a misstatement. No expression of Mr. Darwin or myself can be taken to mean that we believed in a voluntary knowing imitation of the organisation of one insect by another. In my article on "Mimicry" I have expressly disclaimed this view. As to the latter part of the quotation, the first words of Mr. Darwin's paragraph headed "Mimicry," and which Dr. Bree must have had before his eyes, are:—"This principle was first made clear in an admirable paper by Mr. Bates!" A little farther on, my

* "An Exposition of Fallacies in the Hypothesis of Mr. Darwin." By C. R. Bree, M.D., F.Z.S., Senior Physician to the Essex and Colchester Hospital. (London: Longmans, Green, and Co., 1872.)

theory of birds' nests and the colour of female birds is noticed with strong disapproval; and a crushing array of facts is adduced as being opposed to my statement that "when both sexes are coloured in a strikingly conspicuous manner the nest is of such a nature as to conceal the sitting bird." The whitethroat, thrush, snipe, skylark, and hedge-sparrow are adduced as opposed to my views; but as they must all be coloured in a *strikingly conspicuous* manner if they are to be of any use to Dr. Bree or his hypothetical schoolboy, the reason why they are cited remains a mystery to me. Two pages farther on we have more misquotations or blunders. At p. 229 we are told that Nitzsch's "feather tracts" are those parts of the body which have the skin uncovered! while at p. 230 we find that it is the brilliant rays *absorbed* by feathers that produce the vivid, varied, and beautiful colouring of birds! At p. 259 it is stated that "inconceivably minute changes" are alone utilised by natural selection—a misrepresentation which no word of mine or Mr. Darwin's will justify. At p. 261 we have this passage:—"Mr. Wallace adopts Mr. Darwin's view, that there is no such thing as instinct at all, in the sense in which we understand the word. He considers it the 'result of small contingent consequences, as produced by natural selection.'" As the "he" in this sentence appears to refer to Mr. Wallace, and the last ten words are given as a quotation, I felt rather ashamed of myself for writing what I could not the least understand. But a careful examination of my paper shows me that I have said nothing about the "result of contingent consequences;" neither can I find anything of the kind in Mr. Darwin's writings on "instinct." We must pass it over, therefore, as one of the ingenious paraphrases by which Dr. Bree endeavours to elucidate a difficult subject.

In a large folded frontispiece we have "The Descent of Man, after Darwin's Theory," and this is explained at p. 325; but here, too, Mr. Darwin has not been read aright, for "man's ancient ancestor, with cocked ears, tail, prehensile feet, both sexes bearded and hirsute, males with great canine teeth," is placed between Marsupials and Lemurs, whereas Darwin places it after the origin of the catarrhine monkeys, in fact, at Fig. 15 of Dr. Bree's diagram. Our author makes a great point of this, and says:—"From such a Darwinian creation were descended the lowest of the quadrumana, the lemurs."

At p. 331 we have another of our author's enigmatical sentences:—"If an optician makes an object-glass, he does so in reference to the objective, the lens." I had previously imagined that the objective *was* the object-glass; but at p. 351 I was still more puzzled by reference to the "final law of the pendulum" and the "final law of the screw"—two things I had never before heard of.

We think we have now shown that this book contains so large a number of errors, misrepresentations, and misconceptions as to render it quite untrustworthy. We proceed to give a few instances of the author's copious use of declamation, assertion, and opinion, of doubtful facts and illogical arguments.

Of declamation and assertion we have an abundance, the following being a favourable specimen:—"The system of Darwin is eminently illogical, and must fall. It is an

hypothesis which draws large but unsound deductions from the rare and abnormal deviations, leaving the real field untouched and unexplored. It is founded upon the exceptions, not the rules of nature. It is utterly opposed to design, to the teachings of animal mechanics, to the grand and beautiful and everlasting proofs upon which the teleologist loves to dwell. It is a cold, unsound, unphilosophic, degrading system of assumed probabilities, which, if true, would be ten times more wonderful than anything assumed or believed by the most strict and rigid disciple of special creation. Nay, still further, if proved in every point to be true, it would still leave the fact of special creation in all its wonderful mystery. The organic cannot be formed from the inorganic; nor could the organic, if it were so formed, be endowed by any physical force with the laws and properties of life. Go on still in speculation, and I ask, Whence the inorganic—its beginning, its ending, its grand and inexplicable laws, which the physicist in vain attempts to correlate with the vital? Whence gravitation, and what? the sidereal system and its movements? the Spirit that breathes through illimitable space, and lives through an eternity of time?"

A large portion of the volume is occupied with quotations from Agassiz, Houghton, Flourens, Owen, and other opponents of Darwinism; and Dr. Bree complains that these authors have hardly been noticed and not replied to by Darwin or his supporters. But the reason of this is explained in the pages of the present work (where we may suppose their best passages are quoted), by the almost entire absence of argument directed to the essential points of Mr. Darwin's theories, and the immense preponderance of loose assertions, in support of which no evidence is given. Thus, Agassiz asserts that "the differences" among domestic animals "are not of the same kind as the differences we observe among wild animals;" that "the differences we observe among wild animals are the result of a *creative power*;" that "domestication *never* produces forms which are self-perpetuating;" that "*at all times* the world has been inhabited by as great a diversity of animals as exists now;" and other similar assertions, almost all of which are controverted by accumulated facts in the works of Mr. Darwin. Chapter xxviii. is entirely devoted to an account of Agassiz's views of design, and supposed *proofs* of a creative mind at work in every step of the development of a group of animals. The facts will appear to most naturalists thoroughly consistent with the theory of evolution and that of natural selection; while the arguments involve a view of the Deity which most philosophical thinkers will find it hard to accept. Agassiz compares the Creator to an engineer, and speaks of Him as "*constantly and thoughtfully working* among the *complicated structures* that He has made." This idea is not that of an *omniscient* Creator, but of some inferior being with an intellect vastly superior to man's, but yet limited. "*Thoughtfully working*" implies effort to understand and overcome difficulties; whereas *thought* at all, as we think, is utterly opposed to the conception of omniscience.

Another chapter is devoted to Prof. Houghton's theory of "Least Action in Nature;" and here, again, all the established facts are perfectly consistent with, and almost necessary deductions from, evolution and natural selec-

tion. But it is the mere wide general assertions which Dr. Bree quotes with greatest approval as destructive of Darwinism. Thus: "There is no evidence in nature of birds with imperfect wings; no proof of a succession of blunders before perfection was attained. All is perfect, and all was always perfect." And again: "In every arrangement of bones, muscles, joints, and parts of animals, the motion *must* be such as it would be on the hypothesis that the muscles were a living, intelligent thing, trying to save itself trouble." This last may be true, but it is certainly not necessarily true; and as to imperfect wings, what are those of the Cassowary and Apteryx, which have no known function whatever?

The article of M. Flourens against Darwin is given in an appendix, and his facts as to the crossing of quadrupeds are said to be absolutely fatal to the whole theory of natural selection. But these facts are of a very imperfect and scanty character, and are almost wholly negative; and they are fully noticed in Mr. Darwin's elaborate discussion of the difficult question of hybridity, although Dr. Bree assures his readers that these facts were "never contradicted or *even noticed by Mr. Darwin!*" Under the heading "Flourens," in the index to "Animals and Plants under Domestication," are four references, and the works, "Longévité Humaine" and "De l'Instinct," are referred to; while Dr. Bree himself seems to be unaware of the existence of anything but the "Criticism on Darwin," which has been long ago most admirably answered by Prof. Huxley.

We will now give a few examples of the facts and arguments adduced by Dr. Bree himself. At p. 90, he tells us that Mr. Darwin "has given figures of different sized skulls and jaw-bones, scapulæ and clavicles (of pigeons), differing just as much from each other as the same bones in different sized Englishmen would do; and nothing more!" And on the next page he assures us that a Colchester pigeon-fancier told him, that if he allowed his short-beaked tumblers to fly out of doors they would revert to a state of nature, and that, *in a few weeks*, the beautiful small beaks would be as long and as coarse as those of any other bird! On which Dr. Bree triumphantly remarks—"Of course they would." At p. 131 he tells us, that although young song birds will learn other birds' notes with which they may be associated, yet *if kept quite alone* they will sing their own natural song, "*as several who have tried the experiment assure me.*" This is directly opposed to the experiments on this very point of Daines Barrington, quoted by me in "Contributions to the Theory of Natural Selection," 2nd Ed. p. 221, and it would therefore have been a valuable contribution to our knowledge of this difficult subject if the experiments alluded to had been given in detail, not vaguely referred to. At p. 143 it is stated that the bees' cell "is one of the finest examples in nature of what is termed the principle of 'least action'; that is to say, the greatest amount of space is gained by the least amount of material." This is certainly not true, for the cell being suspended from the *top* and *equally thick throughout*, must be too strong at bottom if strong enough at top. There is therefore waste of material. This objection was published nine years ago, in the "Annals of Natural History" for October 1863, and it has never been answered.

On the imperfection of the geological record Dr. Bree

is very strong. He says that Mr. Darwin "asks us to imagine that an ape-like man became evolved in the lower tertiaries, the remains of which or of his descendants have never been discovered. Such a demand upon the credulity of mankind was never, I believe, before seriously made, unless we were told that geese were transmuted barnacles" (p. 180). This is, of course, a sufficient answer to Sir Charles Lyell's careful investigation of the subject, and especially to his most suggestive table of old fossil mammals, given in the twentieth chapter of his "Elements of Geology."

Mr. Mivart and Prof. Owen are both applauded so far as they oppose Darwin, but as both of them believe in some form of development, they are, in Dr. Bree's opinion, almost equally involved in error. Mr. Mivart's doctrine of evolution, he thinks, cannot stand, and "looks too much like Mr. Tegetmeier's pigeons, made to order." It is, however, no doubt offered with the best intentions, "as a means of reconciling scientific and religious thought,"—"two lines which, Mr. Spencer remarks, are running parallel and gradually approaching each other!" (We doubt the accuracy of this quotation from Mr. Spencer, but we are near the end of the book and have learnt not to expect accuracy.) Prof. Owen has, in Dr. Bree's humble opinion, "surrendered the outposts of our defence to the believers in the Darwinian hypothesis." As to Sir Charles Lyell, the charm of his works is gone for Dr. Bree, and he reflects with melancholy what the future will think of the great geologist's transmutation of thought, and with regret that such a man could, "in the maturity of his age and fame, have forsaken the 'principles' of his youth, of his manhood, and of his prime." The researches of M. Gaudry in Greece are of no use whatever; for the various forms of elephant, rhinoceros, horse, and pig, which he and Sir Charles Lyell believe to be intermediate forms, differ no more from one another than do English from Americans, and only prove a "slight variation!"

These are the kind of observations, this the kind of reasoning, by which Dr. Bree thinks to stem the tide of belief in Darwinism. At p. 269, Prof. Huxley is severely criticised for having written the following passage: "The mixture of ignorance and insolence which *at first* characterised a large proportion of the attacks with which Mr. Darwin was assailed, is no longer the sad distinction of anti-Darwinian criticism." This, Dr. Bree, with his usual curious logic, asserts is manifestly untrue, *because* some of the highest men in science, such as Agassiz, Flourens, Owen, Houghton, &c., oppose Darwinism. Why then did Dr. Bree not let well alone—leave the battle in the hands of these redoubted champions, and not give Prof. Huxley the opportunity of retracting his statement, on the ground that although the *insolence* of the first opponents of Darwinism may have vanished, their *ignorance* has returned?

In conclusion, I must again repeat that the only reason for devoting so much space to a book so little worthy of its title or its author, is the wish to warn such as are not well acquainted with Mr. Darwin's works from implicitly relying either on Dr. Bree's facts and arguments, or on the accuracy of his representation of those of Mr. Darwin and his supporters.

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